

Contents

VOLUME 16 NUMBER 1

MicroReview

- 1 **The regulation of transcription initiation by integration host factor**
N. Goosen & P. van de Putte

Research Articles

- 9 **Complementation studies with the gas vesicle-encoding p-vac region of *Halobacterium salinarum* PHH1 reveal a regulatory role for the p-gvpDE genes**
S. Offner & F. Pfeifer
- 21 **Mutational analysis of the ganglioside-binding activity of the type II *Escherichia coli* heat-labile enterotoxin LT-IIb**
T. D. Connell & R. K. Holmes
- 33 **dewA encodes a fungal hydrophobin component of the *Aspergillus* spore wall**
M. A. Stringer & W. E. Timberlake
- 45 **Genes *acrA* and *acrB* encode a stress-induced efflux system of *Escherichia coli***
D. Ma, D. N. Cook, M. Alberti, N. G. Pon, H. Nikaido & J. E. Hearst
- 57 **Novel colicin 10: assignment of four domains to TonB- and TolC-dependent uptake via the Tsx receptor and to pore formation**
H. Pilsel & V. Braun
- 69 **Characterization and distribution of two insertion sequences, IS1191 and iso-IS981, in *Streptococcus thermophilus*: does intergeneric transfer of insertion sequences occur in lactic acid bacteria co-cultures?**
G. Guédon, F. Bourgoïn, M. Pébay, Y. Roussel, C. Colmin, J. M. Simonet & B. Decaris
- 79 **Overexpression of wild-type and mutant NDP kinase in *Dictyostelium discoideum***
O. Sellam, M. Véron & M. Hildebrandt
- 87 **Protein exporter function and *in vitro* ATPase activity are correlated in ABC-domain mutants of HlyB**
E. Koronakis, C. Hughes, I. Milisav & V. Koronakis
- 97 ***Helicobacter pylori* nickel-transport gene *nixA*: synthesis of catalytically active urease in *Escherichia coli* independent of growth conditions**
H. L. T. Mobley, R. M. Garner & P. Bauerfeind
- 111 **Cleavage of trehalose-phosphate in *Bacillus subtilis* is catalysed by a phospho- α -(1-1)-glucosidase encoded by the *treA* gene**
C. Helfert, S. Gotsche & M. K. Dahl
- 121 **Differential expression of *mal* genes under cAMP and endogenous inducer control in nutrient-stressed *Escherichia coli***
L. Notley & T. Ferenci

- 131 **Control of lytic development in the *Streptomyces* temperate phage ϕ C31**
S. E. Wilson, C. J. Ingham, I. S. Hunter & M. C. M. Smith
- 145 **UreR activates transcription at multiple promoters within the plasmid-encoded urease locus of the Enterobacteriaceae**
S. E. F. D'Orazio & C. M. Collins
- 157 **Identification of novel HXT genes in *Saccharomyces cerevisiae* reveals the impact of individual hexose transporters on glycolytic flux**
E. Reifemberger, K. Freidel & M. Ciriacy

Erratum

- 169 **Lipooligosaccharide biosynthesis in *Neisseria gonorrhoeae*: cloning, identification and characterization of the α -1,5 heptosyltransferase I gene (*rfaC*)**
D. Zhou, N.-G. Lee & M. A. Apicella

Corrigendum

- 170 **Transfer of the pIJ101 plasmid in *Streptomyces lividans* requires a *cis*-acting function dispensable for chromosomal gene transfer**
G. S. Pettis & S. N. Cohen

VOLUME 16 NUMBER 2

MicroReview

- 171 **Branched-chain fatty acids: the case for a novel form of cell-cell signalling during *Myxococcus xanthus* development**
J. Downard & D. Toal

Research Articles

- 177 **The *esg* locus of *Myxococcus xanthus* encodes the E1 α and E1 β subunits of a branched-chain keto acid dehydrogenase**
D. R. Toal, S. W. Clifton, B. A. Roe & J. Downard
- 191 **Low-molecular-weight succinoglycan is predominantly produced by *Rhizobium meliloti* strains carrying a mutated ExoP protein characterized by a periplasmic N-terminal domain and a missing C-terminal domain**
A. Becker, K. Niehaus & A. Pühler
- 205 **Activation of the transcriptional regulator XylR of *Pseudomonas putida* by release of repression between functional domains**
S. Fernández, V. de Lorenzo & J. Pérez-Martín
- 215 **The genetic basis of colony opacity in *Streptococcus pneumoniae*: evidence for the effect of box elements on the frequency of phenotypic variation**
S. K. Saluja & J. N. Weiser

- 229 **A family of bacteriocin ABC transporters carry out proteolytic processing of their substrates concomitant with export**
L. S. Håvarstein, D. B. Diep & I. F. Nes
- 241 **Genetic studies reveal that myristoylCoA: protein N-myristoyltransferase is an essential enzyme in *Candida albicans***
R. A. Weinberg, C. A. McWherter, S. K. Freeman, D. C. Wood, J. I. Gordon and S. C. Lee
- 251 **Entry of *Listeria monocytogenes* into hepatocytes requires expression of InlB, a surface protein of the internalin multigene family**
S. Dramsi, I. Biswas, E. Maguin, L. Braun, P. Mastroeni & P. Cossart
- 263 **Purification and characterization of LasD: a second staphylolytic proteinase produced by *Pseudomonas aeruginosa***
S. Park & D. R. Galloway
- 271 **Lipopolysaccharides of polymyxin B-resistant mutants of *Escherichia coli* are extensively substituted by 2-aminoethyl pyrophosphate and contain aminoarabinose in lipid A**
K. Nummila, I. Kilpeläinen, U. Zähringer, M. Vaara & I. M. Helander
- 279 **Activation of a temporally regulated *Caulobacter* promoter by upstream and downstream sequence elements**
M. V. Marques & J. W. Gober
- 291 **Enhanced secretion through the *Shigella flexneri* Mxi-Spa translocon leads to assembly of extracellular proteins into macromolecular structures**
C. Parsot, R. Ménard, P. Gounon & P. J. Sansonetti
- 301 **Isolation and characterization of genes that promote the expression of inositol transporter gene *ITR1* in *Saccharomyces cerevisiae***
J. Nikawa & K. Hosaka
- 309 **The *Escherichia coli* genes *sspA* and *rnk* can functionally replace the *Pseudomonas aeruginosa* alginate regulatory gene *algR2***
D. Schlichtman, S. Shankar & A. M. Chakrabarty
- 321 **Genetic and molecular analysis of a regulatory region of the herbicide 2,4-dichlorophenoxyacetate catabolic plasmid pJP4**
I.-S. You & D. Ghosal
- 333 **A second ABC transporter is involved in oleandomycin resistance and its secretion by *Streptomyces antibioticus***
C. Olano, A. M. Rodríguez, C. Méndez & J. A. Salas
- 345 **The *tagGH* operon of *Bacillus subtilis* 168 encodes a two-component ABC transporter involved in the metabolism of two wall teichoic acids**
V. Lazarevic & D. Karamata
- 357 **Effects of upstream deletions on light- and oxygen-regulated *bacterio-opsin* gene expression in *Halobacterium halobium***
F. Gropp, R. Gropp & M. C. Betlach
- 365 **Saturation of penicillin-binding protein 1 by β -lactam antibiotics in growing cells of *Bacillus licheniformis***
S. Lepage, B. Lakaye, M. Galleni, I. Thamm, M. Crine, S. Gros Lambert & J.-M. Frère

VOLUME 16 NUMBER 3

MicroReviews

- 373 **Collapse and repair of replication forks in *Escherichia coli***
A. Kuzminov
- 385 **Beta-lactamases and bacterial resistance to antibiotics**
J.-M. Frère
- 397 **The role of anti-sigma factors in gene regulation**
K. L. Brown & K. T. Hughes

Research Articles

- 405 **IHF- and RpoN-dependent regulation of hydrogenase expression in *Bradyrhizobium japonicum***
L. K. Black & R. J. Maier
- 415 **The role of the *YAP1* and *YAP2* genes in the regulation of the adaptive oxidative stress responses of *Saccharomyces cerevisiae***
D. W. S. Stephen, S. L. Rivers & D. J. Jamieson
- 425 **Organization of *tcp*, *acf*, and *toxT* genes within a *ToxT*-dependent operon**
R. C. Brown & R. K. Taylor
- 441 **Molecular cloning and functional expression of bacteriophage PK1E-encoded endoneuraminidase *Endo NE***
R. Gerardy-Schahn, A. Bethe, T. Brennecke, M. Mühlenhoff, M. Eckhardt, S. Ziesing, F. Lottspeich & M. Frosch
- 451 **Identification and characterization of *pilG*, a highly conserved pilus-assembly gene in pathogenic *Neisseria***
T. Tønjum, N. E. Freitag, E. Namork & M. Koomey
- 465 **The *phoP* locus influences processing and presentation of *Salmonella typhimurium* antigens by activated macrophages**
M. J. Wick, C. V. Harding, N. J. Twisten, S. J. Normark & J. D. Pfeifer
- 477 **Plasmid pT181 replication is decreased at high levels of RepC per plasmid copy**
S. Iordanescu
- 485 **Identification of a gene, *pilV*, required for type 4 fimbrial biogenesis in *Pseudomonas aeruginosa*, whose product possesses a pre-pilin-like leader sequence**
R. A. Alm & J. S. Mattick
- 497 **Characterization of a five-gene cluster required for the biogenesis of type 4 fimbriae in *Pseudomonas aeruginosa***
P. R. Martin, A. A. Watson, T. F. McCaul & J. S. Mattick

- 509 **Molecular population genetic analysis of the streptokinase gene of *Streptococcus pyogenes*: mosaic alleles generated by recombination**
V. Kapur, S. Kanjilal, M. R. Hamrick, L.-L. Li, T. S. Whittam, S. A. Sawyer & J. M. Musser
- 521 **Transcriptional regulation of the proton translocating NADH dehydrogenase genes (*nuoA-N*) of *Escherichia coli* by electron acceptors, electron donors and gene regulators**
J. Bongaerts, S. Zoske, U. Weidner & G. Unden
- 535 **Molecular genetics of the chloramphenicol-resistance transposon Tn4451 from *Clostridium perfringens*: the TnpX site-specific recombinase excises a circular transposon molecule**
T. L. Bannam, P. K. Crellin & J. I. Rood
- 553 **Characterization of the osmotically inducible gene *osmE* of *Escherichia coli* K-12**
C. Gutierrez, S. Gordia & S. Bonnassie
- 565 **Molecular cloning and characterization of the *rfc* gene of *Pseudomonas aeruginosa* (serotype O5)**
T. R. de Kievit, T. Dasgupta, H. Schweizer & J. S. Lam
- 575 **Characterization of the *pilF-pilD* pilus-assembly locus of *Neisseria gonorrhoeae***
N. E. Freitag, H. S. Seifert & M. Koomey
- 587 **Resistance to mecillinam produced by the co-operative action of mutations affecting lipopolysaccharide, *spoT*, and *cya* or *crp* genes of *Salmonella typhimurium***
D. N. Antón
- 597 **Purification of ArcA and analysis of its specific interaction with the *pfl* promoter-regulatory region**
N. Drapal & G. Sawers
- 649 **Promoter selectivity control of *Escherichia coli* RNA polymerase by ionic strength: differential recognition of osmoregulated promoters by $E\sigma^D$ and $E\sigma^S$ holoenzymes**
Q. Ding, S. Kusano, M. Villarejo & A. Ishihama
- 657 **Organization of host-inducible transcripts on the symbiotic plasmid of *Rhizobium* sp. NGR234**
R. Fellay, X. Perret, V. Viprey, W. J. Broughton & S. Brenner
- 669 **Characterization of IS1221 from *Mycoplasma hyorhinis*: expression of its putative transposase in *Escherichia coli* incorporates a ribosomal frameshift mechanism**
J. Zheng & M. A. McIntosh
- 687 **The *bgl1* gene of *Trichoderma reesei* QM 9414 encodes an extracellular, cellulose-inducible β -glucosidase involved in cellulase induction by sophorose**
R. L. Mach, B. Seiboth, A. Myasnikov, R. Gonzalez, J. Strauss, A. M. Harkki & C. P. Kubicek
- 699 **Mutational analysis of the putative nucleic acid-binding surface of the cold-shock domain, CspB, revealed an essential role of aromatic and basic residues in binding of single-stranded DNA containing the Y-box motif**
K. Schröder, P. Graumann, A. Schnuchel, T. A. Holak & M. A. Marahiel
- 709 **Aminoacyl-tRNA synthetase gene regulation in *Bacillus subtilis*: induction, repression and growth-rate regulation**
H. Putzer, S. Laalami, A. A. Brakhage, C. Condon & M. Grunberg-Manago
- 719 **A family of modular type mannuronan C-5-epimerase genes controls alginate structure in *Azotobacter vinelandii***
H. Ertesvåg, H. K. Høidal, I. K. Hals, A. Rian, B. Doseth & S. Valla
- 733 **Tracheal cytotoxin structural requirements for respiratory epithelial damage in pertussis**
K. E. Luker, A. N. Tyler, G. R. Marshall & W. E. Goldman
- 745 **Differential effect of *dsbA* and *dsbC* mutations on extracellular enzyme secretion in *Erwinia chrysanthemi***
V. E. Shevchik, I. Bortoli-German, J. Robert-Baudouy, S. Robinet, F. Barras & G. Condemine
- 755 **Gene replacement by homologous recombination in *Mycobacterium bovis* BCG**
E. Norman, O. A. Dellagostin, J. McFadden & J. W. Dale
- 761 **Cloning and expression of a murein hydrolase lipoprotein from *Escherichia coli***
K. Ehler, J.-V. Høltje & M. K. Templin
- 769 **Restriction alleviation and modification enhancement by the Rac prophage of *Escherichia coli* K-12**
G. King & N. E. Murray

VOLUME 16 NUMBER 4

MicroReviews

- 609 **Pro-sequence-assisted protein folding**
J. Eder & A. R. Fersht
- 615 **The bacterial 'enigma': cracking the code of cell-cell communication**
G. P. C. Salmond, B. W. Bycroft, G. S. A. B. Stewart & P. Williams

Research Articles

- 625 **Tracheal colonization factor: a *Bordetella pertussis* secreted virulence determinant**
T. M. Finn & L. A. Stevens
- 635 **The chaperone-like protein YerA of *Yersinia pseudotuberculosis* stabilizes YopE in the cytoplasm but is dispensable for targeting to the secretion loci**
E. Frithz-Lindsten, R. Rosqvist, L. Johansson & Å. Forsberg

- 779 **Molecular analysis of *asmA*, a locus identified as the suppressor of *OmpF* assembly mutants of *Escherichia coli* K-12**
R. Misra & Y. Miao
- 789 **Role of potential endoplasmic reticulum retention sequence (RDEL) and the Golgi complex in the cytotoxic activity of *Escherichia coli* heat-labile enterotoxin**
W. Cieplak, Jr., R. J. Messer, M. E. Konkel & C. C. R. Grant
- 801 **Characterization of heat-shock response of the marine bacterium *Vibrio harveyi***
G. Klein, R. Walczak, E. Krasnowska, A. Blaszczyk & B. Lipinski
- MicroCorrespondence*
- 813 **The 3'-terminal half of the *btuB* gene of *Citrobacter freundii* defines essential residues and supports a topological model for the outer membrane receptor**
R. J. Ward & R. E. Glass
- VOLUME 16 NUMBER 5
- MicroReviews*
- 817 **Open complex formation by *Escherichia coli* RNA polymerase: the mechanism of polymerase-induced strand separation of double helical DNA**
P. L. deHaseth & J. D. Helmann
- 825 **The PTR family: a new group of peptide transporters**
H.-Y. Steiner, F. Naider & J. M. Becker
- 835 **Repair, refold, recycle: how bacteria can deal with spontaneous and environmental damage to proteins**
J. E. Visick & S. Clarke
- 847 **Molecular mechanisms and implications for infection of lipopolysaccharide variation in *Neisseria***
J. P. M. van Putten & B. D. Robertson
- Research Articles*
- 855 **Cloning, expression and functional analyses of the catabolite control protein CcpA from *Bacillus megaterium***
C. J. Hueck, A. Kraus, D. Schmiedel & W. Hillen
- 865 **Characterization of the gene encoding the immunodominant 35 kDa protein of *Mycobacterium leprae***
N. Winter, J. A. Triccas, B. Rivoire, M. C. V. Pessolani, K. Eiglmeier, E.-M. Lim, S. W. Hunter, P. J. Brennan & W. J. Britton
- 877 **Novel organization of the site-specific integration and excision recombination functions of the *Staphylococcus aureus* serotype F virulence-converting phages ϕ 13 and ϕ 42**
D. Carroll, M. A. Kehoe, D. Cavanagh & D. C. Coleman
- 895 **Identification of the ligand-binding domain of the surface-located fibrinogen receptor (clumping factor) of *Staphylococcus aureus***
D. McDavitt, P. Francois, P. Vaudaux & T. J. Foster
- 909 **The *Mycobacterium leprae* genome: systematic sequence analysis identifies key catabolic enzymes, ATP-dependent transport systems and a novel *polA* locus associated with genomic variability**
H. Fsihi & S. T. Cole
- 921 **Unique gene organization of thioredoxin and thioredoxin reductase in *Mycobacterium leprae***
B. Wiele, D. van Soolingen, A. Holmgren, R. Offringa, T. Ottenhoff & J. Thole
- 931 **Membrane topology and site-specific mutagenesis of *Pseudomonas aeruginosa* porin OprD**
H. Huang, D. Jeanteur, F. Pattus & R. E. W. Hancock
- 943 **Negative control of *fae* (K88) expression by the 'global' regulator Lrp is modulated by the 'local' regulator *FaeA* and affected by DNA methylation**
T. T. Huisman & F. K. de Graaf
- 955 **Exploring the *Mycoplasma capricolum* genome: a minimal cell reveals its physiology**
P. Bork, C. Ouzounis, G. Casari, R. Schneider, C. Sander, M. Dolan, W. Gilbert & P. M. Gillevet
- 969 ***Bacillus licheniformis* bacitracin-resistance ABC transporter: relationship to mammalian multidrug resistance**
Z. Podlesek, A. Comino, B. Herzog-Velikonja, D. Žgur-Bertok, R. Komel & M. Grabnar
- 977 **Molecular characterization of the *eps* gene cluster of *Pseudomonas solanacearum* and its transcriptional regulation at a single promoter**
J. Huang & M. Schell
- 991 ***rpsL**: a dominant selectable marker for gene replacement in mycobacteria**
P. Sander, A. Meier & E. C. Böttger
- 1001 **Importance of lipooligosaccharide structure in determining gonococcal resistance to hydrophobic antimicrobial agents resulting from the *mtr* efflux system**
C. E. Lucas, K. E. Hagman, J. C. Levin, D. C. Stein & W. M. Shafer
- 1011 **Molecular dissection of PapD interaction with PapG reveals two chaperone-binding sites**
Z. Xu, C. H. Jones, D. Haslam, J. S. Pinkner, K. Dodson, J. Kihlberg & S. J. Hultgren
- 1021 **Structural requirements for the glycolipid receptor of human uropathogenic *Escherichia coli***
R. Striker, U. Nilsson, A. Stonecipher, G. Magnusson & S. J. Hultgren
- 1031 **Screening of stable proteins in an extreme thermophile, *Thermus thermophilus***
M. Tamakoshi, A. Yamagishi & T. Oshima

VOLUME 16 NUMBER 6

Meeting Review

- 1037 **BLAST 1995: International Conference on Bacterial Locomotion and Signal Transduction**
J. J. Falke, D. F. Blair, T. J. Silhavy & R. Schmitt

MicroReviews

- 1051 **Hypothesis: chromosome separation in *Escherichia coli* involves autocatalytic gene expression, transesterification and membrane-domain formation**
V. Norris
- 1059 **Colicin import and pore formation: a system for studying protein transport across membranes?**
C. J. Lazdunski
- 1067 ***Treponema pallidum* and the quest for outer membrane proteins**
J. D. Radolf
- 1075 **Virus DNA packaging: the strategy used by phage λ**
C. E. Catalano, D. Cue & M. Feiss

Research Articles

- 1087 **Functional implications of the expression of *PilC* proteins in meningococci**
M. Virji, K. Makepeace, I. Peak, G. Payne, J. R. Saunders, D. J. P. Ferguson & E. R. Moxon
- 1099 **The *Cryptococcus neoformans* GAL7 gene and its use as an inducible promoter**
B. L. Wickes & J. C. Edman
- 1111 **Regulation of *ptsH* and *ptsI* gene expression in *Streptococcus salivarius* ATCC 25975**
G. Gagnon, C. Vadeboncoeur, L. Gauthier & M. Frenette
- 1123 **A central domain of *Rhizobium* NodE protein mediates host specificity by determining the hydrophobicity of fatty acyl moieties of nodulation factors**
G. V. Bloemberg, E. Kamst, M. Harteveld, K. M. G. M. van der Drift, J. Haverkamp, J. E. Thomas-Oates, B. J. J. Lugtenberg & H. P. Spaink
- 1137 **Molecular characterization of the lincomycin-production gene of *Streptomyces lincolnensis* 78-11**
U. Peschke, H. Schmidt, H.-Z. Zhang & W. Piepersberg

- 1157 **The global regulatory protein FruR modulates the direction of carbon flow in *Escherichia coli***
T. M. Ramseier, S. Bledig, V. Michotey, R. Feghali & M. H. Saier, Jr
- 1171 **The *atxA* gene product activates transcription of the anthrax toxin genes and is essential for virulence**
Z. Dai, J.-C. Sirard, M. Mock & T. M. Koehler
- 1183 **Characterization of the *peLL* gene encoding a novel pectate lyase of *Erwinia chrysanthemi* 3937**
E. Lojkowska, C. Masclaux, M. Boccara, J. Robert-Baudouy & N. Hugouvieux-Cotte-Pattat
- 1197 **Response of a yeast glycogen synthase gene to stress**
H.-T. Ni & D. C. LaPorte
- 1207 **Substitution of two histidine residues in *YadA* protein of *Yersinia enterocolitica* abrogates collagen binding, cell adherence and mouse virulence**
A. Roggenkamp, H.-R. Neuberger, A. Flügel, T. Schmoll & J. Heesemann
- 1221 **Cloning and characterization of a bradyzoite-specifically expressed gene (*hsp30/bag1*) of *Toxoplasma gondii*, related to genes encoding small heat-shock proteins of plants**
W. Böhne, U. Gross, D. J. P. Ferguson & J. Heesemann
- 1231 **Heterogeneous endolysins in *Listeria monocytogenes* bacteriophages: a new class of enzymes and evidence for conserved holin genes within the siphoviral lysis cassettes**
M. J. Loessner, G. Wendlinger & S. Scherer
- 1243 **Subcellular localization and topology of the K88 usher *FaeD* in *Escherichia coli***
Q. A. Valent, J. Zaai, F. K. de Graaf & B. Oudega
- 1259 **Identification of GroEL as a constituent of an mRNA-protection complex in *Escherichia coli***
D. Georgellis, B. Sohlberg, F. U. Hartl & A. von Gabain

MicroCorrespondence

- 1269 **Proposal for a peptidoglycan-associating alpha-helical motif in the C-terminal regions of some bacterial cell-surface proteins**
R. Koebnik

Indexes

- 1271 **Keyword Index**
1277 **Author Index**